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THE INSECT PEST SURVEY  
BULLETIN

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# INSECT PEST SURVEY BULLETIN

Vol. 17

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## ALFALFA WEEVIL SURVEY,<sup>1</sup> FALL OF 1936

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### PURPOSE OF SURVEY

Fall survey of alfalfa weevil abundance was initiated in 1932 in order to indicate the outlook for damage in the following year and to build a reliable record of annual regional abundance which may later be used in studying effects of climate on the weevil. The abundance of overwintering cocoons of the larval parasite Bathyplectes curculionis Thos. was obtained from survey samples and the percentage viability of these was determined by dissection.

### EXTENT OF SURVEY

Districts surveyed were restricted to those regions most important both in regard to alfalfa and to prevalence of weevil damage in recent years. Twelve districts were surveyed. These included parts of Oregon, Idaho, Colorado, Nevada, Utah, and Nebraska. The sampling plan was modified from that used in previous years in that the number of samples per field were reduced and the number of fields in a district were increased. Four samples were taken in each field and 25 fields in each district. This gave a less accurate figure for each field but a more useful indication of the general level of weevil abundance in a region.

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<sup>1</sup>Hypera postica Gyll.

<sup>2</sup>The work on which this report is based was carried out under the direction of J. C. Hamlin. The author was assisted by F. V. Lieberman, R. C. Newton, R. W. Bunn, and L. J. Jones.

## METHODS

Each sample consisted of all trash, alfalfa crowns, and soil to a depth of 2 inches inside a metal die 1 foot square. The volume of samples was reduced by washing, so that weevils, parasite cocoons, and a small amount of litter remained in the lower of two screen-bottom tubs. Washed samples were wrapped in absorbent paper towels and, when dry, were examined in the laboratory.

## LIMITATIONS ON USE OF DATA

A mean of two adults per square foot is considered necessary to produce economic damage in most of the older weevil-infested territory. However, the extent of damage in any locality is subject to modification by the character of the spring weather; that is, the severity of damage depends on whether the weather is favorable or unfavorable for weevil development. Field conditions, such as thin stands and poor growth, may also modify damage in any field and in any district where such conditions are prevalent, because fewer adults will produce the larval concentration necessary to cause damage. Furthermore, injury in any field having menacing numbers of adults is increased by delay in cutting, owing to unfavorable haying weather or to interference with other farm duties, after the plants are mature. This is indicated by the appearance of basal shoots and scattered blossoms.

## RESULTS

Results follow according to States, accompanied by brief discussions of the areas surveyed and the extent of damage in 1936. The sampling data are tabulated by districts and each tabulation is accompanied by a brief interpretation. All averages have reference to areas of 1 square foot.

## OREGON

Damage in Oregon last season was prevalent in Jackson County and in Eagle Valley, Baker County; consequently these areas were surveyed in the fall. Although there was virtually no damage in Malheur County, some of the farmers thought that the weevil might be building up to damaging populations again. For this reason Malheur County was also surveyed, being treated with Eagle Valley as one district.

Eagle Valley, Baker County.-- Adult populations were small indicating only slight damage next season. Only three fields showed populations of one or more adults, which normally would not be sufficient to cause damage, but in this area slight injury may occur in the hillside fields, owing to thin stands and poor growth. Cocoons of B. curculionis were rather scarce but, in view of the rather small weevil populations this parasite promises to be

effective in minimizing the production of adults in 1937. Results of the survey in Eagle Valley, sampled on October 10, are shown in the following table.

Field No.	<u>H. postica</u>		<u>B. curculionis cocoons</u>	
	adults		Present	Viabile
	Number		Number	Percent
1 - - - - -	1.00	:	2.00	62.50
2 - - - - -	.25	:	2.75	45.45
3 - - - - -	0	:	1.75	42.86
4 - - - - -	.75	:	2.00	12.50
5 - - - - -	.75	:	1.50	0
6 - - - - -	1.00	:	6.00	16.67
7 - - - - -	.75	:	3.25	0
8 - - - - -	.50	:	1.00	25.00
9 - - - - -	.75	:	2.50	50.00
10 - - - - -	1.25	:	2.75	45.45
11 - - - - -	.50	:	1.50	83.33
12 - - - - -	.50	:	.75	66.67
Average -	0.37	:	2.31	32.43

Malheur County.--Weevil adults were extremely scarce, being found in only three fields and averaging only 0.08, which indicated no damage for 1937. B. curculionis cocoons were scarce, averaging only 0.96, but this average is large, compared with the weevil population. Results of the survey in Malheur County, sampled on October 11-12, were as follows:

Field No.	<u>H. postica</u>		<u>B. curculionis cocoons</u>	
	adults		Present	Viabile
	Number		Number	Percent
1 - - - - -	0	:	0	--
2 - - - - -	0.25	:	0.25	100.00
3 - - - - -	0	:	.75	33.33
4 - - - - -	.25	:	2.00	37.50
5 - - - - -	0	:	0	-
6 - - - - -	0	:	.25	0
7 - - - - -	.50	:	.25	0
8 - - - - -	0	:	.50	50.00
9 - - - - -	0	:	1.25	20.00
10 - - - - -	0	:	.50	0
11 - - - - -	0	:	3.50	23.57
12 - - - - -	0	:	2.75	81.82
13 - - - - -	0	:	.50	50.00
Average -	0.08	:	0.96	42.00

Jackson County.-- Adult populations indicated that about one-fifth of the fields will be damaged in 1937. Populations necessary to produce damage are not definitely known, but more adults are required than in the older infested areas, because of climatic factors. The recently introduced parasite has spread rapidly, cocoons having been recovered in 18 of the 25 fields



surveyed. Although the populations are still small, they have increased satisfactorily to date. In the following table are shown the results of the survey in Jackson County, sampled from October 14 to November 14.

Field No.	<u>H. postica</u>		<u>B. curculionis cocoons</u>	
	adults		Present	Viable
	Number		Number	Percent
1 - - - - -	1.00		7.75	29.03
2 - - - - -	.25		.50	0
3 - - - - -	.50		1.75	14.28
4 - - - - -	.25		0	--
5 - - - - -	.25		0	--
6 - - - - -	1.00		.50	50.00
7 - - - - -	2.25		.25	100.00
8 - - - - -	2.00		4.50	61.11
9 - - - - -	2.00		2.75	90.91
10 - - - - -	2.75		.25	0
11 - - - - -	.50		1.00	75.00
12 - - - - -	.75		0	--
13 - - - - -	1.50		.25	100.00
14 - - - - -	1.00		1.50	50.00
15 - - - - -	.50		0	--
16 - - - - -	1.25		.25	0
17 - - - - -	1.75		1.00	25.00
18 - - - - -	2.25		1.00	25.00
19 - - - - -	1.50		1.25	40.00
20 - - - - -	.75		.25	100.00
21 - - - - -	.50		0	--
22 - - - - -	.50		.25	100.00
23 - - - - -	0		0	--
24 - - - - -	.25		0	--
25 - - - - -	.50		.75	100.00
Average -	1.03		1.03	36.60

# IDAHO

Damage in Idaho last season was negligible, less than 1 percent of the fields being injured. However, larval populations were sufficient to, possibly, produce damaging numbers of adults in both the eastern and western parts of the State; and consequently these areas were surveyed last fall.

Eastern Idaho.-- The survey in eastern Idaho covered parts of five counties, Bingham and Bonneville Counties being considered as a subdistrict and Jefferson, Madison, and Fremont Counties as another. These divisions were deemed necessary because of differences in climate, the three northern counties invariably having colder winters and more snow than the other two. Although the entire eastern section is considered a two-crop area, occasionally, as was the case this season, three crops can be cut in the two southern counties. In the northern counties, particularly Madison and Fremont, only two crops are cut in any season. Adult populations indicate only slight damage in 1937, menacing populations being present in less than one-fifth of the fields.

B. curculionis cocoons were rather scarce but this parasite promises to be effective next season. The following table shows results of the survey in Bonneville and Bingham Counties, sampled on September 22-24.

Field No.	:	<u>H. postica</u> adults	:	<u>B. curculionis cocoons</u>	
				Present	Viabie
		<u>Number</u>		<u>Number</u>	<u>Percent</u>
1 - - - - -	:	3.25	:	3.25	46.15
2 - - - - -	:	1.50	:	6.75	14.81
3 - - - - -	:	2.00	:	3.50	35.71
4 - - - - -	:	.50	:	23.25	12.90
5 - - - - -	:	.50	:	8.50	8.82
6 - - - - -	:	.75	:	.75	66.67
7 - - - - -	:	.25	:	0	--
8 - - - - -	:	.50	:	.50	50.00
9 - - - - -	:	0	:	0	--
10 - - - - -	:	.25	:	.25	0
11 - - - - -	:	.25	:	.50	50.00
12 - - - - -	:	.75	:	10.75	30.23
13 - - - - -	:	.50	:	15.50	6.45
Average -	:	0.85	:	3.60	26.74

Adult populations indicate considerable damage in 1937, menacing populations being present in almost half of the fields. B. curculionis cocoons averaged 5.85 per square foot and may be sufficiently numerous to be effective, at least during the early part of the 1937 season. In the next table are given results of the survey in Fremont, Madison, and Jefferson Counties, sampled on September 22-24.

Field No.	:	<u>H. postica</u> adults	:	<u>B. curculionis cocoons</u>	
				Present	Viabie
		<u>Number</u>		<u>Number</u>	<u>Percent</u>
14 - - - - -	:	1.00	:	3.75	0
15 - - - - -	:	.25	:	1.00	50.00
16 - - - - -	:	.25	:	6.25	12.00
17 - - - - -	:	1.25	:	14.00	10.71
18 - - - - -	:	.50	:	1.00	25.00
19 - - - - -	:	.25	:	4.28	47.06
20 - - - - -	:	2.00	:	1.25	20.00
21 - - - - -	:	4.50	:	8.25	12.12
22 - - - - -	:	2.25	:	3.75	33.33
23 - - - - -	:	1.75	:	15.50	4.84
24 - - - - -	:	2.50	:	4.50	22.22
25 - - - - -	:	2.75	:	6.75	7.41
Average -	:	1.60	:	5.85	13.88

Canyon County.--Observation in the lower Snake River Valley of western Idaho last season revealed comparable conditions in Ada, Gem, Canyon, Payette, and Washington Counties. As a result, the fall survey was limited to Canyon County, which contained the largest alfalfa acreage. Adult populations were small, no fields having menacing numbers. B. curculionis cocoons were scarce

but, in view of the small weevil populations, the parasite promises to be effective in 1937. Results of the survey in Canyon County, sampled on October 13-15, were as follows:

Field No.	:	<u>H. postica</u> adults	:	<u>B. curculionis cocoons</u>	
				Present	Viabie
		<u>Number</u>		<u>Number</u>	<u>Percent</u>
1 - - - - -	:	0.50	:	3.00	41.67
2 - - - - -	:	1.50	:	0.50	50.00
3 - - - - -	:	0	:	0	--
4 - - - - -	:	0	:	1.00	100.00
5 - - - - -	:	.25	:	1.00	75.00
6 - - - - -	:	.25	:	1.50	33.33
7 - - - - -	:	1.25	:	3.00	33.33
8 - - - - -	:	0	:	.50	0
9 - - - - -	:	0	:	0	--
10 - - - - -	:	1.00	:	3.25	23.08
11 - - - - -	:	0	:	.50	0
12 - - - - -	:	0	:	0	--
13 - - - - -	:	0	:	.50	100.00
14 - - - - -	:	0	:	.75	33.33
15 - - - - -	:	0	:	.75	66.66
16 - - - - -	:	1.00	:	2.75	45.45
17 - - - - -	:	0	:	.50	50.00
18 - - - - -	:	.25	:	1.75	42.86
19 - - - - -	:	.50	:	.25	0
20 - - - - -	:	.50	:	4.25	5.88
21 - - - - -	:	.75	:	8.75	28.57
22 - - - - -	:	.25	:	.25	0
23 - - - - -	:	.25	:	1.50	50.00
24 - - - - -	:	.50	:	.25	100.00
25 - - - - -	:	0	:	1.25	0
Average -	:	0.35	:	1.51	33.77

# UTAH

The survey in Utah included Box Elder, Salt Lake, Sevier, and Sanpete Counties, which are among the most important and most persistently damaged areas in the State. Damage, even in these counties, last season was slight, but larval populations were sufficiently large in each possibly to produce menacing adult populations.



Box Elder County.-- Adult populations indicate considerable damage in 1937, one-fifth of the fields having menacing populations. B. curculionis cocoons are sufficiently abundant for this parasite to be highly effective next season as usual. The results of the survey in Box Elder County, sampled on October 22-25, are tabulated below.

Field No.	:	<u>H. postica</u> adults	:	<u>B. curculionis</u> cocoons	
				Present	Viabie
	:	Number	:	Number	Percent
1 - - - - -	:	1.25	:	2.75	9.09
2 - - - - -	:	4.25	:	3.25	23.08
3 - - - - -	:	2.25	:	15.25	29.51
4 - - - - -	:	0	:	13.75	34.55
5 - - - - -	:	1.00	:	11.00	22.73
6 - - - - -	:	1.25	:	13.75	40.00
7 - - - - -	:	.50	:	12.75	33.33
8 - - - - -	:	0	:	1.00	75.00
9 - - - - -	:	0	:	1.25	20.00
10 - - - - -	:	0	:	0	--
11 - - - - -	:	0	:	.50	50.00
12 - - - - -	:	.50	:	2.25	33.33
13 - - - - -	:	.75	:	1.00	75.00
14 - - - - -	:	.25	:	4.75	78.95
15 - - - - -	:	0	:	0	--
16 - - - - -	:	1.50	:	4.00	31.25
17 - - - - -	:	2.50	:	12.75	33.33
18 - - - - -	:	.25	:	2.75	9.09
19 - - - - -	:	0	:	1.50	83.33
20 - - - - -	:	1.25	:	11.75	17.21
21 - - - - -	:	1.25	:	7.50	20.00
22 - - - - -	:	1.00	:	6.75	25.93
23 - - - - -	:	2.50	:	2.00	25.00
24 - - - - -	:	2.00	:	7.00	14.29
25 - - - - -	:	1.00	:	2.50	20.00
Average -	:	1.01	:	5.67	32.77

Salt Lake County. -- Adult populations indicate considerable damage next season, approximately one-fifth of the fields being menaced. B. curculionis cocoons were numerous, indicating the parasite may be expected to be highly effective as usual in 1937. Data obtained in the survey in

Salt Lake County, sampled from October 27 to November 11, are summarized in the following table.

Field No.	<u>H. postica</u>	<u>B. curculionis cocoons</u>	
	adults	Present	Viable
	Number	Number	Percent
1 - - - - -	0.75	5.25	23.81
2 - - - - -	.75	4.50	16.67
3 - - - - -	2.50	5.00	25.00
4 - - - - -	0	8.00	9.38
5 - - - - -	.50	28.50	6.14
6 - - - - -	.75	9.00	11.11
7 - - - - -	0	6.75	40.74
8 - - - - -	1.50	12.25	14.29
9 - - - - -	.25	22.75	4.40
10 - - - - -	3.50	32.50	14.62
11 - - - - -	.50	26.00	19.23
12 - - - - -	1.25	13.75	9.09
13 - - - - -	.75	13.50	7.41
14 - - - - -	.50	4.00	18.75
15 - - - - -	.25	3.25	0
16 - - - - -	.50	4.25	23.53
17 - - - - -	.25	3.25	23.08
18 - - - - -	1.50	23.25	4.30
19 - - - - -	0	9.25	37.84
20 - - - - -	1.00	7.75	22.58
21 - - - - -	.50	9.25	27.03
22 - - - - -	.25	8.25	39.39
23 - - - - -	1.00	11.00	20.45
24 - - - - -	2.25	41.75	17.37
25 - - - - -	2.25	5.50	9.09
Average - -	0.93	12.74	15.31

Sevier-Sanpete Counties.-- Although sampled separately, these counties are contiguous, identical in most respects, and may be considered as one district. In Sevier County adult populations indicated slight damage next season, approximately one-fifth of the fields being menaced. B. curculionis cocoons were numerous and this species promises to minimize the production of adults in 1937. Results of the survey in Sevier County, sampled on November 5-7, were as follows;

Field No.	<u>H. postica</u>	<u>B. curculionis cocoons</u>	
	adults	Present	Viable
	Number	Number	Percent
1 - - - - -	1.00	8.50	5.88
2 - - - - -	1.25	16.75	8.96
3 - - - - -	2.00	16.50	27.27
4 - - - - -	.25	24.50	30.61
5 - - - - -	.50	3.75	6.67
6 - - - - -	.75	4.25	29.41
7 - - - - -	1.00	11.00	22.73
8 - - - - -	.25	6.25	32.00
9 - - - - -	4.00	8.50	8.82
10 - - - - -	.50	18.75	8.00
11 - - - - -	0	2.00	50.00
12 - - - - -	.75	4.50	16.67
13 - - - - -	.25	.75	33.33
Average - -	0.96	9.69	19.25

In Sanpete County adult populations indicated considerable damage in 1937, one-third of the fields being menaced. Of the total area in the two counties, one-fourth of the fields have menacing weevil populations. In this county B. curculionis cocoons were numerous and the parasite promises to be effective next season, as usual. Results of the survey in Sanpete County, sampled on November 5-7, are shown in the following table.

Field No.	:	<u>H. postica</u>	:	<u>B. curculionis</u> cocoons	
		adults		Present	Viabls
	:	<u>Number</u>	:	<u>Number</u>	<u>Percent</u>
1 - - - -	:	4.00	:	12.75	17.65
2 - - - -	:	1.25	:	8.75	0
3 - - - -	:	.75	:	9.75	15.38
4 - - - -	:	3.25	:	6.75	33.33
5 - - - -	:	.75	:	5.25	23.81
6 - - - -	:	3.50	:	15.00	11.67
7 - - - -	:	2.25	:	13.25	13.21
8 - - - -	:	.50	:	11.75	23.40
9 - - - -	:	1.25	:	16.25	32.31
10 - - - -	:	1.00	:	29.00	6.90
11 - - - -	:	.75	:	8.75	8.57
12 - - - -	:	.50	:	21.75	6.90
Average-	:	1.65	:	13.25	14.47

### COLORADO

Last season weevil damage in Colorado was confined to Mesa, Delta, and Montrose Counties. In Mesa County 75 percent of the fields were severely damaged, In Delta and Montrose Counties damage was less severe and varied in different districts, one having 14-percent damage and another 90 percent. Consequently, a survey was made last fall in the more important districts of these counties, Mesa County being considered as one district and Delta-Montrose Counties as another.

Delta County.-- Adult populations indicated slight damage next season. No fields sampled had menacing populations but in many fields the numbers present closely approximated that necessary to produce damage.

The results of the survey in Delta County, sampled September 8-18, are as follows:

Field No.	<u>H. postica</u>		<u>B. curculionis cocoons</u>	
	adults		Present	Viabie
	Number		Number	Percent
1 - - - - -	1.25	:	4.00	18.75
2 - - - - -	1.50	:	8.50	5.88
3 - - - - -	.75	:	13.00	21.15
4 - - - - -	1.25	:	7.00	53.57
5 - - - - -	1.25	:	3.25	30.77
6 - - - - -	1.25	:	9.00	0
7 - - - - -	.75	:	2.75	18.18
8 - - - - -	1.25	:	4.75	26.32
9 - - - - -	1.50	:	1.00	75.00
10 - - - - -	1.75	:	1.25	0
Average - -	1.25	:	5.45	20.64

Montrose County.-- Adult populations indicated slight damage in 1937. Only two fields actually had menacing adult populations, but in several others the number closely approximated that constituting a menace. The results of the survey in Montrose County, sampled from September 23 to October 8, are tabulated below.

Field No.	<u>H. Postica</u>		<u>B. curculionis cocoons</u>	
	adults		Present	Viabie
	Number		Number	Percent
1 - - - - -	1.25	:	2.00	12.50
2 - - - - -	1.25	:	2.25	11.11
3 - - - - -	1.00	:	13.50	11.11
4 - - - - -	4.25	:	2.25	44.44
5 - - - - -	.50	:	.75	66.67
6 - - - - -	1.50	:	6.75	18.52
7 - - - - -	2.00	:	8.25	21.21
8 - - - - -	1.50	:	15.00	25.00
9 - - - - -	1.00	:	12.25	4.08
10 - - - - -	.75	:	5.75	13.04
11 - - - - -	1.00	:	3.00	75.00
12 - - - - -	1.00	:	3.25	7.69
13 - - - - -	1.25	:	4.75	10.53
14 - - - - -	.50	:	11.00	27.27
15 - - - - -	1.00	:	3.50	21.43
Average - -	1.32	:	6.28	19.36

Mesa County.-- Adult populations indicated widespread damage in 1937, menacing populations being present in about three-fourths of the fields. Only 1.5 adults per square foot are necessary to produce damage in this area, owing to poor stands and growth. Last season's studies in western Colorado indicated that the parasite, although rather numerous, was less abundant and less effective than in Utah. Parasitization of early larvae was less and the



effectiveness declined earlier in the season and more rapidly. In view of these findings, the parasite populations are insufficient to be highly effective in western Colorado next season. In the following table the results of this survey are presented. This county was sampled from October 14 to November 23.

Field No.	<u>H. postica</u>		<u>B. curculionis cocoons</u>	
	adults		Present	Viabls
	Number		Number	Percent
1 - - - - -	3.75	:	11.50	6.52
2 - - - - -	.75	:	2.50	20.00
3 - - - - -	2.50	:	10.50	0
4 - - - - -	1.75	:	6.25	40.00
5 - - - - -	2.25	:	3.78	6.67
6 - - - - -	2.50	:	3.00	33.33
7 - - - - -	4.00	:	11.75	40.43
8 - - - - -	4.75	:	15.00	5.00
9 - - - - -	1.75	:	5.25	33.33
10 - - - - -	2.50	:	11.50	41.30
11 - - - - -	3.50	:	4.50	27.78
12 - - - - -	2.25	:	7.50	33.33
13 - - - - -	1.50	:	3.50	7.14
14 - - - - -	2.00	:	3.75	6.67
15 - - - - -	.75	:	3.25	38.46
16 - - - - -	3.00	:	1.50	16.69
17 - - - - -	.25	:	1.50	33.33
18 - - - - -	.50	:	10.75	25.58
19 - - - - -	.50	:	12.75	1.96
20 - - - - -	1.00	:	3.25	7.69
21 - - - - -	1.75	:	3.50	21.43
22 - - - - -	3.00	:	1.50	0
23 - - - - -	1.50	:	5.00	45.00
24 - - - - -	.75	:	26.00	18.27
25 - - - - -	2.75	:	1.50	83.33
Average - -	2.06	:	6.83	20.79

# NEVADA

Reports of slight damage in western Nevada last season, especially in Washoe and Douglas Counties, prompted a fall survey of this area, including Churchill County. Interest centered on Douglas County where, until last season, the weevil was negligible. Churchill County was considered as a whole district, while the others were considered half-districts.

Douglas County.-- Adult populations indicated slight damage in 1937, one-fourth of the fields having menacing numbers of adults. B. curculionis cocoons were numerous and sufficient to indicate the parasite's effectiveness next season if this county is comparable, as it is believed to be, with



Churchill County, where detailed studies have been made. Results of the survey in Douglas County, sampled on November 20, were as follows:

Field No.	<u>H. postica</u>		<u>B. curculionis cocoons</u>	
	adults		Present	Viable
	Number		Number	Percent
1 - - - - -	0.50	:	12.50	8.00
2 - - - - -	0	:	.75	33.33
3 - - - - -	0	:	1.25	40.00
4 - - - - -	0	:	24.25	12.37
5 - - - - -	.50	:	10.75	9.30
6 - - - - -	.50	:	15.50	17.74
7 - - - - -	7.50	:	45.25	8.84
8 - - - - -	.50	:	9.00	27.78
9 - - - - -	2.50	:	9.00	8.33
10 - - - - -	.50	:	7.00	21.43
11 - - - - -	0	:	6.25	28.00
12 - - - - -	2.00	:	4.25	11.76
Average -	1.20	:	12.15	15.38

Washoe County.-- Adult populations indicated very slight damage in 1937, only one field having a menacing population. B. curculionis cocoons were very numerous, indicating that the parasite will be effective, as usual, next season in minimizing the production of weevils. Results of the survey in this county, sampled on November 21-22, were as follows:

Field No.	<u>H. postica</u>		<u>B. curculionis cocoons</u>	
	adults		Present	Viable
	Number		Number	Percent
1 - - - - -	0.50	:	33.00	6.58
2 - - - - -	.25	:	1.50	0
3 - - - - -	0	:	1.75	14.29
4 - - - - -	.25	:	21.50	0
5 - - - - -	.50	:	4.75	21.05
6 - - - - -	3.25	:	*69.50	3.00
7 - - - - -	1.00	:	15.75	3.17
8 - - - - -	0	:	15.00	7.69
9 - - - - -	.25	:	3.75	40.00
10 - - - - -	.50	:	8.75	8.57
11 - - - - -	1.00	:	17.50	10.00
12 - - - - -	.25	:	23.25	0
Average -	0.65	:	18.42	5.81

\*Only 100 dissected of total.

Churchill County.-- Adult populations indicated no damage in 1937, no fields having menacing populations. B. curculionis cocoons were rather numerous and, in view of the small weevil population, the parasite will be effective next season in preventing large weevil populations. The following

table shows the results of the survey in Churchill County, sampled on November 17-19.

Field No.	<u>H. postica</u>		<u>B. curculionis cocoons</u>	
	adults		Present	Viabile
	Number		Number	Percent
1 - - - - -	0		5.25	4.76
2 - - - - -	0		10.00	2.50
3 - - - - -	0.75		18.75	1.33
4 - - - - -	0		12.00	4.17
5 - - - - -	0		.75	100.00
6 - - - - -	.25		12.50	4.00
7 - - - - -	0		12.00	22.92
8 - - - - -	0		13.25	11.32
9 - - - - -	.25		19.50	0
10 - - - - -	.25		8.75	5.71
11 - - - - -	.50		9.25	16.22
12 - - - - -	.50		17.75	4.23
13 - - - - -	.50		3.00	8.33
14 - - - - -	0		.50	0
15 - - - - -	0		3.75	0
16 - - - - -	0		11.75	2.13
17 - - - - -	0		1.25	20.00
18 - - - - -	0		17.50	8.57
19 - - - - -	0		4.75	5.26
20 - - - - -	0		1.25	20.00
21 - - - - -	.75		3.75	0
22 - - - - -	0		1.00	0
23 - - - - -	0		21.50	2.33
24 - - - - -	0		4.25	5.88
25 - - - - -	0		10.25	4.88
Average -	0.15		8.97	6.02

# NEBRASKA

Sioux County.-- The infestation in western Nebraska first attracted attention in 1934, when slight damage was reported in Sioux County, and since that time a few fields have been damaged annually. In 1936 only one field was severely damaged. Two additional ones showed heavy feeding but, in general, weevils were scarce throughout the county. Ecological studies last season revealed the fundamental trends of the weevil population to be roughly comparable to those existing throughout the older infested areas. A fall survey of 12 fields was consequently made to complete the year's studies. Adult populations indicated virtually no damage next season, only one field having menacing numbers. B. curculionis cocoons were scarce and, in view of the low effectiveness of this parasite last season, seemed hardly sufficient to be more effective in 1937. The extremely cold winter, common to this area, may further reduce both parasite and weevil populations.



The results of the survey in Sioux County, sampled on October 27, are tabulated below.

Field No.	H. postica adults	B. curculionis cocoons	
		Present	Viablc
	Number	Number	Percent
1 - - - - -	1.25	2.50	30.00
2 - - - - -	.75	.25	0
3 - - - - -	.50	.25	0
4 - - - - -	0	.25	0
5 - - - - -	0	0	--
6 - - - - -	.25	.25	0
7 - - - - -	.25	.50	50.00
8 - - - - -	0	0	--
9 - - - - -	.25	.25	0
10 - - - - -	0	0	--
11 - - - - -	2.00	.50	0
12 - - - - -	.25	3.50	7.18
Average -	0.46	0.73	15.15

#### OUTLOOK FOR WEEVIL DAMAGE IN 1937

Estimates of probable weevil damage next season are based only on those fields actually having menacing adult populations this fall; however, there are fields in each locality that have slightly fewer adults than the number considered menacing and these fields are in a doubtful class. The damage expected next season, therefore, may be more or less extensive than is intimated in this estimate, depending on whether the spring is adverse or favorable for weevil development. Results of the fall survey indicated that widespread, severe damage next season will be limited to Mesa County, in western Colorado, where three-fourths of the fields are menaced. Roughly, one-fourth of the total number of fields surveyed are menaced, and moderate damage is expected in the upper Snake River Valley of eastern Idaho; in Jackson County, southwestern Oregon; in Delta and Montrose Counties, western Colorado; in Douglas County, western Nevada; and in Box Elder, Salt Lake, Sevier, and Sanpete Counties, Utah. Slight or negligible damage is expected in the lower Snake River Valley of western Idaho and eastern Oregon; Eagle Valley, Baker County, Oreg.; Sioux County, Neb.; and Washoe and Churchill Counties, western Nevada. With the exception of western Colorado and southwestern Oregon, the parasite promises to be effective in preventing the production of large weevil populations in 1937. In western Colorado the parasite is rather scarce and, furthermore, its value is doubtful because of its early spring decline in effectiveness. In southwestern Oregon the parasite has only recently been introduced and is not sufficiently abundant to be widely effective as yet, but the results of the recent fall survey reveal that it is rapidly establishing itself.